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AI-Driven Analysis of Integrative Approach to Genetic Predispositions and Ayurvedic Treatments Related to Mental Health

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ABSTRACT

Currently people concentrate more on Lifestyle diseases compared to inheritable diseases. An inheritable complaint is caused by one or further abnormalities in the genome. As a system of drug, Ayurveda cannot overlook the significance of a case's cerebral state in diagnosing and treating ails. When there's no remedial option, it's preferable to follow the Acharya's recommended preventives. medicines that are synthesised for mortal health Original specifics for mortal brain ails are expensive, long- acting characteristic treatments that can have substantial and necessary adverse goods and low case adherence. Psychiatric conditions, for the utmost part, respond well to treatment. numerous Ayurvedic remedies are salutary in the treatment of psychiatric problems. Psychic pressures are the core cause of colorful conditions, according to medical wisdom. Ayurveda has a well- developed area of psychiatry, with scientifically validated styles for treating internal and physical problems related to cerebral imbalance.

Keywords: Ayurvedic Remedies, Genetic Predispositions, Ayurvedic Treatments, Psychological Imbalance, Human Brain Illnesses.

I. INTRODUCTION

Inheritable tendencies play a significant part in internal health, impacting conditions like depression, anxiety, and schizophrenia. While genetics can set the stage, environmental factors and life choices also play critical places in internal well- being [2]. Ayurveda is a comprehensive, natural system of health care that began in the ancient Vedic times of India. Ayurveda is a Sanskrit term that translates as the "Science of Life." Sanskrit was the main language used in communication and tutoring in the ancient Vedic times. In the environment of current knowledge, numerous of the original generalities of Veda (translates as "knowledge") and Ayurveda aren't easily understood, and this results in varied interpretations in current communication. also, numerous of the terms firstly used cannot be duly restated in current language, and some terms have no corresponding counterparts in English, which results in confusion and misreading. This study proposes a correlation of the ancient Ayurvedic generalities and language with the current understanding of cellular physiology. motifs covered include genotype and phenotype and their correlation with Janma (birth) Prakriti and Deha (body) Prakriti (psychophysiological Ayurvedic constitution), and epigenetics and its correlation as an important medium of Ayurveda [3].

II. LITERATURE REVIEW

Munmun De Choudhury (2021) Artificial intelligence (AI) is increasingly employed in healthcare fields such as oncology, radiology, and dermatology. However, the use of AI in mental healthcare and neurobiological research has been modest. Given the high morbidity and mortality in people with psychiatric disorders, coupled with a worsening shortage of mental healthcare providers, there is an urgent need for AI to help identify high-risk individuals and provide interventions to prevent and treat mental illnesses. While published research on AI in neuropsychiatry is rather limited, there is a growing number of successful examples of AI's use with electronic health records, brain imaging, sensor-based monitoring systems, and social media platforms to predict, classify, or subgroup mental illnesses as well as problems like suicidality. This article is the product of a Study Group held at the American College of Neuropsychopharmacology conference in 2019. It provides an overview of AI approaches in mental healthcare, seeking to help with clinical diagnosis, prognosis, and treatment, as well as clinical and technological challenges, focusing on multiple illustrative publications [1].

Robert Keith Wallace (2020) Ayurveda is a comprehensive, natural health care system that originated in the ancient Vedic times of India. Epigenetics refers to the external modification of DNA that turns genes on and off, affecting gene expression. This occurs without changes in the basic structure of the DNA. This gene expression can have transgenerational effects. The major factors that cause epigenetic changes are lifestyle and behavior, diet and digestion, stress, and environmental factors. Ayurveda addresses these factors, thereby affecting the Deha (body) Prakriti (psychophysiological constitution), which corresponds to the phenotype, and indirectly the Janma (birth) Prakriti, which corresponds to the genotype [3].

Andrea Maugeri (2020) Previous evidence from in vivo and observational research suggested how dietary factors might affect DNA methylation signatures involved in obesity risk. However, findings from experimental studies are still scarce and, if present, not so clear. The current review summarizes studies investigating the effect of dietary interventions on DNA methylation in the general population and especially in people at risk for or with obesity. Overall, these studies suggest how dietary interventions may induce DNA methylation changes, which in turn are likely related to the risk of obesity and to different response to weight loss programs. These findings might explain the high interindividual variation in weight loss after a dietary intervention, with some people losing a lot of weight while others much less so. However, the interactions between genetic, epigenetic, environmental and lifestyle factors make the whole framework even more complex and further studies are needed to support the hypothesis of personalized interventions against obesity [7].

Jorge Andrade (2019) Studies demonstrate the impact of diet and physical activity on epigenetic biomarkers, specifically DNA methylation. However, no intervention studies have examined the combined impact of dietary and activity changes on the blood epigenome. The objective of this study was to examine the impact of the Make Better Choices 2 (MBC2) healthy diet and activity intervention on patterns of epigenome-wide DNA methylation. We examined region-based differential methylation patterns using linear regression models with the false discovery rate of 0.05. We also conducted pathway analysis using gene ontology (GO), KEGG, and IPA canonical pathway databases. The results demonstrate that the MBC2 diet and physical activity intervention impacts patterns of DNA methylation in gene regions related to cell cycle regulation and carcinogenesis. Future studies will examine DNA methylation as a biomarker to identify populations that may particularly benefit from incorporating health behavior change into plans for precision prevention [6].

Hari Sharma (2016) Ayurveda is a traditional system of medicine originated in the ancient Vedic times

of India. This body of knowledge is found in well-documented texts such as the Charaka Samhita and Sushruta Samhita, and describes physiology and interrelated systems of the body, variations in human constitution, surgery, herbal use, and health-promoting recommendations. Ayurveda is translated as the "Science of Life;" Ayus = Life, and Veda = knowledge/science. The principles and treatment modalities have endured over time. For Ayurveda to be appreciated by Western medical researchers, this traditional system of medicine needs to be understood in terms of modern science. The current theories of physiology that support Ayurvedic approaches need to be explored. Herein, one approach of how the realm of epigenetics can help elucidate the mechanisms of Ayurveda has been described [8].

Intellectual and developmental disorders

These include diseases like cerebral paralysis, down pattern, ADHD, autism diapason diseases and fragile X pattern which generally appear in a child before the age of 18. Data from different sources form inputs for the analysis of intellectual and experimental disabilities. The neuroimaging data are analysed with a DNN to descry the presence of ID or DD in children. Grounded on this, AI- supported webbing systems have been developed to dissect the electronic health record of individualities for the discovery of colourful disabilities and diseases. Machine literacy can be used to descry the presence of diseases like ASD using eye movements. In addition, AI finds its part in the discovery of ASDs from the presence of motherly and blood autoanti body- grounded biomarkers [5].

Genetic Predispositions

Many mental health disorders have a genetic component, with studies indicating that certain traits and conditions can run in families. Variations in neurotransmitter systems (like serotonin and dopamine) can affect mood and behavior.

Epigenetics: Environmental factors can influence gene expression, meaning that lifestyle choices can potentially mitigate or exacerbate genetic risks.

Genotype and Phenotype in Ayurveda

In Ayurvedic terms, the Janma Prakriti or birth Prakriti does n't change and is the foundation of the psychophysiological constitution or Deha Prakriti (body Prakriti), which changes and is dynamic. The genotype corresponds to Ayurvedic birth Prakriti and the phenotype corresponds to Ayurvedic Deha Prakriti. Disturbance in the Deha Prakriti is known as Vikriti in Ayurveda, which correlates with diseases and conditions in the current medical system. Manohar has described the presence of pictorial accounts in the ancient Ayurvedic textbooks about the heritage of conditions and the inheritable base for the transmission of similar conditions from parents to get [6].

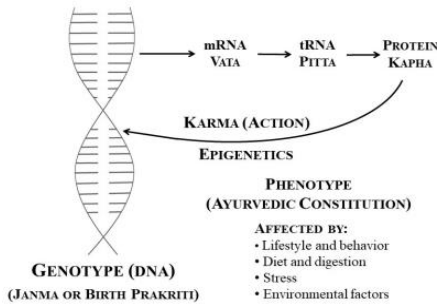

Figure 1. Correlation With Ayurveda And Dna And Cellular Function

Epigenetics and Ayurveda

In brief, DNA methylation, histone revision, chromatin redoing, and micro RNA (miRNA) are involved in modifying DNA expression. DNA methylation is a process in which methyl groups are added to the DNA patch. This process changes the exertion of the DNA. Epigenetics refers to the external revision of DNA that turns genes on and off, affecting gene expression. This occurs without changes in the DNA sequence. This process produces a change in the phenotype without a change in the genotype. Histones are proteins that DNA wraps around in the nexus, forming chromatin. This process condenses DNA into a further compact form and protects the DNA structure and sequence. Chromatin can condense or it can relax, thereby changing the expression of DNA. Histones play a major part in the condensation and relaxation of chromatin and thereby affect DNA expression. Chromatin redoing refers to the rearrangement of chromatin from a condensed state to a transcriptionally accessible state, allowing recap factors or other DNA- binding proteins to pierce DNA and control gene expression. MicroRNA refers to small non-coding RNA motes that "silence" or stop the functioning of Mrna [8].

Ayurvedic Treatments

Ayurveda, the ancient system of medicine from India, offers holistic approaches to mental health that consider the individual's unique constitution (dosha), lifestyle, and emotional well-being.

Diet and Nutrition:

Sattvic Foods: Promoting clarity and calmness, foods like fresh fruits, vegetables, and whole grains can support mental health.

Balancing Doshas: Tailoring dietary choices to balance individual dosha imbalances (Vata, Pitta, Kapha) can help improve mental health.

Herbal Remedies:

Ashwagandha: Known for its adaptogenic properties, it may help reduce stress and anxiety.

Brahmi: Often used to enhance cognitive function and memory, it also has calming effects.

Tulsi: Known as holy basil, it is believed to reduce stress and promote emotional balance.

Mindfulness and Meditation:

Pranayama: Breathing exercises can help regulate emotions and reduce anxiety.

Meditation: Practices such as mindfulness meditation can enhance emotional resilience and promote mental clarity.

Lifestyle Practices:

Daily Routines (Dinacharya): Establishing regular sleep, eating, and activity patterns can support mental stability. Physical postures combined with breath control can help reduce stress and improve overall mental health.

Therapies:

Panchakarma: Detoxification therapies may help in balancing the body and mind, potentially alleviating symptoms of mental health issues.

Integrative Approach

Combining Ayurvedic treatments with conventional methods can be beneficial. For individuals with a genetic predisposition to mental health disorders, a personalized Ayurvedic approach can enhance resilience and overall well-being. Always consult with healthcare professionals to create a balanced treatment plan.

Dietary Interventions during Pregnancy

Implicit preventative strategies against rotundity should start as beforehand as possible, indeed during the perinatal period. A recent review of experimental studies on mama - child dyads epitomized how the commerce between salutary factors and DNA methylation might be related to gestation issues. Interestingly, the main diet- associated changes in DNA methylation regarded genes in the metabolic and growth pathways, similar as insulin- suchlike growth factor 2(IGF2). This gene encodes for a protein hormone with growth- regulating, insulin- suchlike and mitogenic conditioning, especially during gestation [10]. In malignancy of promising findings from experimental studies, substantiation from experimental exploration is still scarce. To my knowledge, the study by Lee and associates was the first probing the effect of salutary interventions during gestation on DNA methylation in babe. The intervention comported in salutary supplementation with ω- 3 polyunsaturated adipose acid (PUFA) at 18 – 22 weeks of gravidity. The authors reported an association between ω- 3 PUFA supplementation and long interspersed nucleotide rudiments 1(LINE- 1) methylation situations, especially among babe of smoker women. It's worth mentioning that experimental exploration associated LINE- 1 methylation with several complaint in majority, including cancer, neurodegenerative conditions, rotundity, and metabolic diseases [11].

III. RESEARCH METHODOLOGY

Creating a methodology for AI- driven analysis of inheritable tendencies and Ayurvedic treatments related to internal health involves several crucial factors. Salutary (Ahara) schedule, sleeping (Nidra) and home terrain (stress free or stressed-out terrain) of once 48 hours of each mothers was recorded to get their effect on the mother's milk rates. probe how inheritable tendencies impact internal health and explore how Ayurvedic treatments can alleviate these goods. Identify inheritable labels linked to internal health conditions and estimate the efficacity of specific Ayurvedic treatments. AI's powers in data analysis, pattern recognition, and prophetic modelling can vastly increase the delicacy of Dosha evaluations, Prakruti assesment, judgments, and treatment suggestions, hence enhancing the effectiveness of Ayurvedic curatives. Review studies on inheritable tendencies associated with internal health diseases (e.g., depression, anxiety, schizophrenia). probe how AI has been preliminarily applied in inheritable exploration and indispensable drug. Assessment of mother's diet was done to observe its effect on vitiation and sanctification of milk. For assessment of Doshika configuration of diet, first of all Doshika configuration of all the food particulars were observed.

IV. DATA ANALYSIS

Out of 100 mothers, 32 mothers belonged to Vata Prakriti and 25 mothers were of Pitta Prakriti whereas 43 mothers have Kapha Prakriti. As per educational background, maximum mothers were graduated (n=21) and post-graduated (n=58) and 5 mothers have Ph.D qualification. (Table 1).

TABLE 1: INCIDENCE OF PRAKRITI OF LACTATING MOTHERS AND THE EDUCATIONAL STATUS

S.N.	Education	N=100	Prakriti		
			Vata n= 32	Pitta n=25	Kapha n= 43
1.	Post-Doctoral	5	00	00	05
2.	Post-Graduation	58	10	10	19
3.	Graduation	21	8	8	11
4.	Intermediate	11	5	5	4
5.	High School	1	4	01	00
6.	Middle School	1	01	01	01
7.	Illiterate	3	4	00	03

In Tridosha, vitiated milk maximum composition of diet was of Vatavardhaka, sleep was Kaphavardhaka and environment was Pittavardhaka. Diet was also Vatavardhaka in Dwandaja vitiated milk while sleep was Kaphavardhaka and environment was Vatavardhaka. Among Vata vitiated milk, maximum portion of diet was Vatavardhaka, sleep and environment was also Vatavardhaka.

TABLE 2: VITIATED MILK AT THE TIME OF REGISTRATION IN DIFFERENT MATERNAL PRAKRITI AND THE INCIDENCE OF PURE

Maternal Prakriti (N=100)	Mother Milk						
	Pure Milk (n=40)	Vitiated Milk (n=60)					
		Vataja (n=03)	Pittaja (n=00)	Kaphaja (n=12)	Dwandaja (n=26)	Tridoshaja (n=19)	Total
Vata (n=32)	**14**	3	00	00	10	3	**16**
Pitta (n=25)	**10**	00	00	00	7	6	**13**
Kapha (n=43)	**16**	00	00	12	9	10	**31**

Table number 2 shows the incidence of pure and vitiated milk. At the time of registration 40% milk sample were pure while 60% milk sample were vitiated. On applying One Way ANOVA, the mean values of weight and BMI were found to vary significantly as per Prakriti ($p<0.0001$). The significant pairs observed through Post Hoc test for weight and BMI were V vs P ($p=0.0003$) and V vs K ($p<0.0001$).

V. CONCLUSIONS

The integration of AI with Ayurveda presents a ground- breaking occasion for advancing customized healthcare by combining the benefits of both ultramodern technology and traditional wisdom. This integration can also grease the digitalization and worldwide availability of Ayurvedic knowledge, making holistic health ways more extensively available. This correlation and understanding of the process of mending and health conservation will ameliorate the understanding and communication between

Ayurveda and the current medical system, and lead to better integration of both lores in the operation of optimal health. prepossession information and services for family planning can help reduce the number of high- threat gravidity. Ayurveda addresses these four major factors of life and thereby affects both the phenotype and genotype in a positive way through the process of epigenetics. Ayurveda can be appreciated through the wisdom of epigenetics, covering the manifested expression of life, and how to maintain and ameliorate the health of the existent. The epigenetic factors in life affect the phenotype in a positive or negative way, and laterally affect the inheritable expression in a positive or negative way, which can be transmitted to the get. Ayurveda covers both aspects of life – inheritable and phenotypic – and is a comprehensive, holistic, and substantiated system of health care. therefore, it's proposed that epigenetics is an important medium of Ayurveda. In addition, exploration on Ayurvedic modalities affecting gene expression will further increase the correlation and understanding between the current medical system and Ayurveda.

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